

THE ASTROPHYSICAL JOURNAL
CONTENTS OF VOLUME 651, PART 1

2006 NOVEMBER 1, NUMBER 1

	Page
ULTRAVIOLET PUMPING OF HYPERFINE TRANSITIONS IN THE LIGHT ELEMENTS, WITH APPLICATION TO 21 cm HYDROGEN AND 92 cm DEUTERIUM LINES FROM THE EARLY UNIVERSE <i>Leonid Chuzhoy & Paul R. Shapiro</i>	1
THE EINSTEIN RING 0047-2808 REVISITED: A BAYESIAN INVERSION <i>B. J. Brewer & G. F. Lewis</i>	8
USING GALAXY TWO-POINT CORRELATION FUNCTIONS TO DETERMINE THE REDSHIFT DISTRIBUTIONS OF GALAXIES BINNED BY PHOTOMETRIC REDSHIFT © <i>Michael Schneider, Lloyd Knox, Hu Zhan, & Andrew Connolly</i>	14
THE STELLAR MASSES AND STAR FORMATION HISTORIES OF GALAXIES AT $z \approx 6$: CONSTRAINTS FROM SPITZER OBSERVATIONS IN THE GREAT OBSERVATORIES ORIGINS DEEP SURVEY <i>Haojing Yan, Mark Dickinson, Mauro Giavalisco, Daniel Stern, Peter R. M. Eisenhardt, & Henry C. Ferguson</i>	24
A DIRECT UPPER LIMIT ON THE DENSITY OF COSMOLOGICAL DUST FROM THE ABSENCE OF AN X-RAY SCATTERING HALO AROUND THE $z = 4.3$ QUASAR QSO 1508+5714 © <i>Andrea Petric, Gisela A. Telis, Frits Paerels, & David J. Helfand</i>	41
ATOMIC CARBON IN APM 08279+5255 AT $z = 3.91$ <i>J. Wagg, D. J. Wilner, R. Neri, D. Downes, & T. Wiklind</i>	46
NEUTRAL GAS DENSITY IN DAMPED Ly α SYSTEMS © <i>M. Trenti & M. Stiavelli</i>	51
QUASARS PROBING QUASARS. I. OPTICALLY THICK ABSORBERS NEAR LUMINOUS QUASARS © <i>Joseph F. Hennawi, Jason X. Prochaska, Scott Burles, Michael A. Strauss, Gordon T. Richards, David J. Schlegel, Xiaohui Fan, Donald P. Schneider, Nadia L. Zakamska, Masamune Oguri, James E. Gunn, Robert H. Lupton, & Jon Brinkmann</i>	61
DISCOVERY OF H α ABSORPTION IN THE UNUSUAL BROAD ABSORPTION LINE QUASAR SDSS J083942.11+380526.3 © <i>Kentaro Aoki, Ikuru Iwata, Kouji Ohta, Masataka Ando, Masayuki Akiyama, & Naoyuki Tamura</i>	84
A THREE-DIMENSIONAL STUDY OF THE LOCAL ENVIRONMENT OF BRIGHT IRAS GALAXIES: THE ACTIVE GALACTIC NUCLEUS--STARBURST CONNECTION © <i>Elias Koulouridis, Vahram Chavushyan, Manolis Plionis, Yair Krongold, & Deborah Dultzin-Hacyan</i>	93
SPITZER IRS SPECTRA OF OPTICALLY FAINT INFRARED SOURCES WITH WEAK SPECTRAL FEATURES <i>D. W. Weedman, B. T. Soifer, Lei Hao, J. L. Higdon, S. J. U. Higdon, J. R. Houck, E. Le Floch, M. J. I. Brown, A. Dey, B. T. Jannuzi, M. Rieke, V. Desai, C. Bian, D. Thompson, L. Armus, H. Teplitz, P. Eisenhardt, & S. P. Willner</i>	101
A STRUCTURED LEPTONIC JET MODEL OF THE "ORPHAN" TeV GAMMA-RAY FLARES IN TeV BLAZARS <i>Masaaki Kusunose & Fumio Takahara</i>	113
THE MASS ASSEMBLY HISTORY OF FIELD GALAXIES: DETECTION OF AN EVOLVING MASS LIMIT FOR STAR-FORMING GALAXIES <i>Kevin Bundy, Richard S. Ellis, Christopher J. Conselice, James E. Taylor, Michael C. Cooper, Christopher N. A. Willmer, Benjamin J. Weiner, Alison L. Coil, Kai G. Noeske, & Peter R. M. Eisenhardt</i>	120
ON THE NORMALIZATION OF THE COSMIC STAR FORMATION HISTORY <i>Andrew M. Hopkins & John F. Beacom</i>	142
INTEGRATED NEBULAR ABUNDANCES OF DISK GALAXIES © <i>John Moustakas & Robert C. Kennicutt Jr.</i>	155
THE ORIGIN OF THE BIFURCATION IN THE SAGITTARIUS STREAM <i>M. Fellhauer, V. Belokurov, N. W. Evans, M. I. Wilkinson, D. B. Zucker, G. Gilmore, M. J. Irwin, D. M. Bramich, S. Vidihi, R. F. G. Wyse, T. C. Beers, & J. Brinkmann</i>	167
THE PROPERTIES OF THE MID- TO FAR-INFRARED EMISSION IN THE LARGE MAGELLANIC CLOUD <i>Itsuki Sakon, Takashi Onaka, Hidehiro Kaneda, Daisuke Tokura, Toshinobu Takagi, Yuka Y. Tajiri, Hidenori Takahashi, Daisuke Kato, Toshikazu Onishi, Akiko Kawamura, & Yasuo Fukui</i>	174
SWIFT XRT FOLLOW-UP OBSERVATIONS OF TeV SOURCES OF THE HESS INNER GALAXY SURVEY © <i>R. Landi, L. Bassani, A. Malizia, N. Masetti, J. B. Stephen, A. Bazzano, P. Ubertini, A. J. Bird, & A. J. Dean</i>	190

	Page
CATALOG OF FUNDAMENTAL-MODE RR LYRAE STARS IN THE GALACTIC BULGE FROM THE OPTICAL GRAVITATIONAL LENSING EXPERIMENT © <i>Matthew J. Collinge, Takahiro Sumi, & Daniel Fabrycky</i>	197
COMPOUND AND PERPENDICULAR DIFFUSION OF COSMIC RAYS AND RANDOM WALK OF THE FIELD LINES. I. PARALLEL PARTICLE TRANSPORT MODELS © <i>G. M. Webb, G. P. Zank, E. Kh. Kaghashvili, & J. A. le Roux</i>	211
CHANDRA ACIS SPECTROSCOPY OF N157B: A YOUNG COMPOSITE SUPERNOVA REMNANT IN A SUPERBUBBLE © <i>Yang Chen, Q. Daniel Wang, E. V. Gotthelf, Bing Jiang, You-Hua Chu, & Robert Gruendl</i>	237
THE KINEMATIC AND PLASMA PROPERTIES OF X-RAY KNOTS IN CASSIOPEIA A FROM THE CHANDRA HETGS <i>J. S. Lazendic, D. Dewey, N. S. Schulz, & C. R. Canizares</i>	250
SPECTROPOLARIMETRY OF THE 3.4 μm FEATURE IN THE DIFFUSE ISM TOWARD THE GALACTIC CENTER QUINTUPLET CLUSTER <i>J. E. Chiar, A. J. Adamson, D. C. B. Whittet, A. Chrysostomou, J. H. Hough, T. H. Kerr, R. E. Mason, P. F. Roche, & G. Wright</i>	268
COLLIMATION OF ASTROPHYSICAL JETS: THE ROLE OF THE ACCRETION DISK MAGNETIC FIELD DISTRIBUTION <i>Christian Fendt</i>	272
SHAPING BIPOLAR PLANETARY NEBULAE: HOW MASS LOSS LEADS TO WAISTLINE DEVELOPMENT <i>C. Dijkstra & A. K. Speck</i>	288
AN INFRARED IMAGING STUDY OF THE BIPOLAR PROTO-PLANETARY NEBULA IRAS 16594-4656 <i>Kevin Volk, Bruce J. Hrivnak, Kate Y. L. Su, & Sun Kwok</i>	294
DENSE CORES WITH MULTIPLE PROTOSTARS: THE VELOCITY FIELDS OF L1448 IRS 3, NGC 1333 IRAS 2, AND NGC 1333 IRAS 4 © <i>N. H. Volgenau, L. G. Mundy, L. W. Looney, & W. J. Welch</i>	301
RESOLVING AND PROBING THE CIRCUMSTELLAR DISK OF THE HERBIG Ae STAR MWC 480 AT $\lambda = 1.4$ MM: EVOLVED DUST? © <i>Murad Hamidouche, Leslie W. Looney, & Lee G. Mundy</i>	321
THE UPSTREAM MAGNETIC FIELD OF COLLISIONLESS GRB SHOCKS <i>Zhuo Li & Eli Waxman</i>	328
DECELERATION OF A RELATIVISTIC, PHOTON-RICH SHELL: END OF PREACCELERATION, DAMPING OF MAGNETOHYDRODYNAMIC TURBULENCE, AND THE EMISSION MECHANISM OF GAMMA-RAY BURSTS <i>Christopher Thompson</i>	333
TIME-DEPENDENT MONTE CARLO RADIATIVE TRANSFER CALCULATIONS FOR THREE-DIMENSIONAL SUPERNOVA SPECTRA, LIGHT CURVES, AND POLARIZATION © <i>Daniel Kasen, R. C. Thomas, & P. Nugent</i>	366
CIRCUMSTELLAR EMISSION FROM TYPE Ib AND Ic SUPERNOVAE © <i>Roger A. Chevalier & Claes Fransson</i>	381
INTERACTION OF MASSIVE BLACK HOLE BINARIES WITH THEIR STELLAR ENVIRONMENT. I. EJECTION OF HYPERVELOCITY STARS <i>Alberto Sesana, Francesco Haardt, & Piero Madau</i>	392
FURTHER EVIDENCE FOR VARIABLE SYNCHROTRON EMISSION IN XTE J1118+480 IN OUTBURST <i>R. I. Hynes, E. L. Robinson, K. J. Pearson, D. M. Gelino, W. Cui, Y. Q. Xue, M. A. Wood, T. K. Watson, D. E. Winget, & I. M. Silver</i>	401
IDENTIFICATION OF THE INFRARED COUNTERPART TO A NEWLY DISCOVERED X-RAY SOURCE IN THE GALACTIC CENTER <i>Valerie J. Mikles, Stephen S. Eikenberry, Michael P. Muno, Reba M. Bandyopadhyay, & Shannon Patel</i>	408
DISK-JET COUPLING IN THE LOW-MASS X-RAY BINARY 4U 1636-53 FROM INTEGRAL OBSERVATIONS © <i>Mariateresa Fiocchi, Angela Buzzano, Pietro Ubertini, & Pierre Jean</i>	416
X-RAY SPECTRAL STUDY OF THE PHOTOIONIZED STELLAR WIND IN VELA X-1 <i>Shin Watanabe, Masao Sako, Manabu Ishida, Yoshitaka Ishisaki, Steven M. Kahn, Takayoshi Kohmura, Fumiaki Nagase, Frederik Paerels, & Tadayuki Takahashi</i>	421
FLUORINE ABUNDANCE VARIATIONS AS A SIGNATURE OF ENHANCED EXTRA MIXING IN RED GIANTS OF THE GLOBULAR CLUSTER M4 <i>Pavel A. Denissenkov, Marc Pinsonneault, & Donald M. Terndrup</i>	438
A SURVEY OF CHROMOSPHERIC ACTIVITY IN THE SOLAR-TYPE STARS IN THE OPEN CLUSTER M67 <i>Mark S. Giampapa, Jeffrey C. Hall, Richard R. Radick, & Sallie L. Balunas</i>	444
TWISTED-TORUS EQUILIBRIUM STRUCTURES OF MAGNETIC FIELDS IN MAGNETIZED STARS <i>Shijun Yoshida, Shin'ichirou Yoshida, & Yoshiharu Eriguchi</i>	462
THE SEARCH FOR POLARIZATION VARIABILITY IN IM PEGASI <i>A. V. Berdyugin, S. V. Berdyugina, V. Piirola, & A. G. Butkevich</i>	475
NANODIAMONDS FROM AGB STARS: A NEW TYPE OF PRESOLAR GRAIN IN METEORITES <i>Alexander B. Verchovsky, Anatolii V. Fisenko, Lubov F. Semjonova, John Bridges, Martin R. Lee, & Ian P. Wright</i>	481

CHEMICAL EVOLUTION OF THE GALACTIC BULGE AS DERIVED FROM HIGH-RESOLUTION INFRARED SPECTROSCOPY OF K AND M RED GIANTS ©	Page 491
<i>Katia Cunha & Verne V. Smith</i>	
SPITZER IRAC PHOTOMETRY OF M, L, AND T DWARFS ©	502
<i>Brian M. Patten, John R. Stauffer, Adam Burrows, Massimo Marengo, Joseph L. Hora, Kevin L. Luhman, Sarah M. Sonnett, Todd J. Henry, Deepak Raghavan, S. Thomas Megeath, James Liebert, & Giovanni G. Fazio</i>	
THE THERMAL REGULATION OF GRAVITATIONAL INSTABILITIES IN PROTOPLANETARY DISKS. III. SIMULATIONS WITH RADIATIVE COOLING AND REALISTIC OPACITIES ©	517
<i>Aaron C. Boley, Annie C. Mejia, Richard H. Durisen, Kai Cai, Megan K. Pickett, & Paola D'Alessio</i>	
ON THE POSSIBLE PROPERTIES OF SMALL AND COLD EXTRASOLAR PLANETS: IS OGLE 2005-BLG-390Lb ENTIRELY FROZEN?	535
<i>David Ehrenreich, Alain Lecavelier des Etangs, Jean-Philippe Beaulieu, & Olivier Grasset</i>	
VEGETATION SIGNATURE IN THE OBSERVED GLOBALLY INTEGRATED SPECTRUM OF EARTH CONSIDERING SIMULTANEOUS CLOUD DATA: APPLICATIONS FOR EXTRASOLAR PLANETS ©	544
<i>Pilar Montañés-Rodríguez, E. Pallé, P. R. Goode, & F. J. Martín-Torres</i>	
THE EFFECT OF THE ELECTRIC FIELD INDUCED BY PRECIPITATING ELECTRON BEAMS ON HARD X-RAY PHOTON AND MEAN ELECTRON SPECTRA	553
<i>Valentina V. Zharkova & Mykola Gordonskyy</i>	
THREE-DIMENSIONAL STRUCTURE OF THE 2002 APRIL 21 CORONAL MASS EJECTION	566
<i>J.-Y. Lee, J. C. Raymond, Y.-K. Ko, & K.-S. Kim</i>	
FORWARD MODELING OF ACOUSTIC WAVE PROPAGATION IN THE QUIET SOLAR SUBPHOTOSPHERE ©	576
<i>S. Shelyag, R. Erdélyi, & M. J. Thompson</i>	
ON THE PHYSICAL REALIZATION OF TWO-DIMENSIONAL TURBULENCE FIELDS IN MAGNETIZED INTERPLANETARY PLASMAS	584
<i>A. Stockem, I. Lerche, & R. Schlickeiser</i>	
ASTROPHYSICAL GYROKINETICS: BASIC EQUATIONS AND LINEAR THEORY	590
<i>Gregory G. Howes, Steven C. Cowley, William Dorland, Gregory W. Hammett, Eliot Quataert, & Alexander A. Schekochihin</i>	
ERRATUM: "ASCA OBSERVATIONS OF THE ABSORPTION LINE FEATURES FROM THE SUPERLUMINAL JET SOURCE GRS 1915+105" (ApJ, 539, 413 [2000])	615
<i>Taro Kotani, Ken Ebisawa, Tadayasu Dotani, Hajime Inoue, Fumiaki Nagase, Yasuo Tanaka, & Yoshihiro Ueda</i>	
ERRATUM: "FIRST RESULTS FROM THE CHARA ARRAY. VII. LONG-BASELINE INTERFEROMETRIC MEASUREMENTS OF VEGA CONSISTENT WITH A POLE-ON, RAPIDLY ROTATING STAR" (ApJ, 645, 664 [2006])	617
<i>J. P. Aufdenberg, A. Mérand, V. Coudé du Foresto, O. Absil, E. Di Folco, P. Kervella, S. T. Ridgway, D. H. Berger, T. A. ten Brummelaar, H. A. McAlister, J. Sturmann, L. Sturmann, & N. H. Turner</i>	
2006 NOVEMBER 10, NUMBER 2	
PERTURBATION THEORY RELOADED: ANALYTICAL CALCULATION OF NONLINEARITY IN BARYONIC OSCILLATIONS IN THE REAL-SPACE MATTER POWER SPECTRUM ©	619
<i>Donghui Jeong & Eiichiro Komatsu</i>	
COSMOLOGICAL STRUCTURE FORMATION CREATES LARGE-SCALE MAGNETIC FIELDS ©	627
<i>E. R. Siegel & J. N. Fry</i>	
THE INFLUENCE OF BARYONS ON THE MASS DISTRIBUTION OF DARK MATTER HALOS ©	636
<i>W. P. Lin, Y. P. Jing, S. Mao, L. Gao, & I. G. McCarthy</i>	
SUNYAEV-ZEL'DOVICH EFFECT SIGNALS IN CLUSTER MODELS	643
<i>Beth A. Reid & David N. Spergel</i>	
POPULATION III GENERATED COSMIC RAYS AND THE PRODUCTION OF ${}^6\text{Li}$	658
<i>Emmanuel Rollinde, Elisabeth Vangioni, & Keith A. Olive</i>	
THREE GRAVITATIONAL LENSES FOR THE PRICE OF ONE: ENHANCED STRONG LENSING THROUGH GALAXY CLUSTERING	667
<i>C. D. Fassnacht, J. P. McKean, L. V. E. Koopmans, T. Treu, R. D. Blandford, M. W. Auger, T. E. Jeltema, L. M. Lubin, V. E. Margoniner, & D. Wittman</i>	
RINGS AND BENT CHAIN GALAXIES IN THE GEMS AND GOODS FIELDS	676
<i>Debra Meloy Elmegreen & Bruce G. Elmegreen</i>	
THE DIRECT DETECTION OF LYMAN CONTINUUM EMISSION FROM STAR-FORMING GALAXIES AT $z \sim 3$ ©	688
<i>Alice E. Shapley, Charles C. Steidel, Max Pettini, Kurt L. Adelberger, & Dawn K. Erb</i>	
DUST ABSORPTION ALONG THE LINE OF SIGHT FOR HIGH-REDSHIFT OBJECTS ©	704
<i>M. Trenti & M. Stiavelli</i>	

	Page
REST-FRAME OPTICAL SPECTROSCOPIC CLASSIFICATIONS FOR SUBMILLIMETER GALAXIES © <i>Tadafumi Takata, Kazuhiro Sekiguchi, Ian Smail, Scott C. Chapman, J. E. Geach, A. M. Swinbank, Andrew Blain, & R. J. Ivison</i>	713
LOW RADIATIVE EFFICIENCY ACCRETION AT WORK IN ACTIVE GALACTIC NUCLEI: THE NUCLEAR SPECTRAL ENERGY DISTRIBUTION OF NGC 4565 © <i>M. Chiaberge, R. Gilli, F. D. Macchetto, & William B. Sparks</i>	728
OPTICAL POLARIMETRY OF THE JETS OF NEARBY RADIO GALAXIES. I. THE DATA <i>Eric S. Perlman, C. A. Padgett, Markos Georganopoulos, William B. Sparks, John A. Biretta, Christopher P. O'Dea, Stefi A. Baum, Mark Birkinshaw, D. M. Worrall, Fred Dulwich, Sebastian Jester, André Martel, Alessandro Capetti, & J. Patrick Leahy</i>	735
THE X-RAY PROPERTIES OF ACTIVE GALACTIC NUCLEI WITH DOUBLE-PEAKED BALMER LINES <i>Iskra V. Strateva, W. N. Brandt, Michael Eracleous, Donald P. Schneider, & George Chartas</i>	749
EFFECTS OF A SUPERMASSIVE BLACK HOLE BINARY ON A NUCLEAR GAS DISK <i>Hideori Matsui, Asao Habe, & Takayuki R. Saitoh</i>	767
A REVERBERATION-BASED MASS FOR THE CENTRAL BLACK HOLE IN NGC 4151 <i>Misty C. Bentz, Kelly D. Denney, Edward M. Cackett, Matthias Dietrich, Jeffrey K. J. Fogel, Himel Ghosh, Keith Horne, Charles Kuehn, Takeo Minezaki, Christopher A. Onken, Bradley M. Peterson, Richard W. Pogge, Vladimir I. Pronik, Douglas O. Richstone, Sergey G. Sergeev, Marianne Vestergaard, Matthew G. Walker, & Yuzuru Yoshii</i>	775
MULTIWAVELENGTH OBSERVATIONS OF THE BL LACERTAE OBJECT PKS 2155-304 WITH XMM-NEWTON © <i>Y. H. Zhang, J. M. Bai, S. N. Zhang, A. Treves, L. Maraschi, & A. Celotti</i>	782
PHOTOMETRIC REDSHIFTS IN THE IRAC SHALLOW SURVEY © <i>M. Brodwin, M. J. I. Brown, M. L. N. Ashby, C. Bian, K. Brand, A. Dey, P. R. Eisenhardt, D. J. Eisenstein, A. H. Gonzalez, J.-S. Huang, B. T. Jannuzi, C. S. Kochanek, E. McKenzie, S. S. Murray, M. A. Pahre, H. A. Smith, B. T. Soifer, S. A. Stanford, D. Stern, & R. J. Elston</i>	791
ENVIRONMENTAL EFFECTS ON GASEOUS DISKS OF THE VIRGO SPIRAL GALAXIES <i>Hiroyuki Nakanishi, Nario Kuno, Yoshiaki Sofue, Naoko Sato, Naomasa Nakai, Yasuhiro Shioya, Tomoka Tosaki, Sachiko Onodera, Kazuo Sorai, Fumi Egusa, & Akihiko Hirota</i>	804
THE FATE OF SPIRAL GALAXIES IN CLUSTERS: THE STAR FORMATION HISTORY OF THE ANEMIC VIRGO CLUSTER GALAXY NGC 4569 © <i>A. Boselli, S. Boissier, L. Cortese, A. Gil de Paz, M. Seibert, B. F. Madore, V. Buat, & D. C. Martin</i>	811
COLOR-MAGNITUDE DIAGRAMS OF RESOLVED STARS IN VIRGO CLUSTER DWARF GALAXIES © <i>Nelson Caldwell</i>	822
DYNAMICAL PROPERTIES OF ULTRALUMINOUS INFRARED GALAXIES. II. TRACES OF DYNAMICAL EVOLUTION AND END PRODUCTS OF LOCAL ULTRALUMINOUS MERGERS © <i>K. M. Dasgrya, L. J. Tacconi, R. I. Davies, T. Naab, R. Genzel, D. Lutz, E. Sturm, A. J. Baker, S. Veilleux, D. B. Sanders, & A. Burkert</i>	835
CO DETECTION AND MILLIMETER CONTINUUM EMISSION FROM LOW SURFACE BRIGHTNESS GALAXIES <i>Mousumi Das, Karen O'Neil, Stuart N. Vogel, & Stacy McGaugh</i>	853
ULTRACOMPACT BLUE DWARF GALAXIES: HUBBLE SPACE TELESCOPE IMAGING AND STELLAR POPULATION ANALYSIS <i>Michael R. Corbin, William D. Vacca, Roberto Cid Fernandes, John E. Hibbard, Rachel S. Somerville, & Rogier A. Windhorst</i>	861
EXTENDED EMISSION BY DUST IN THE DWARF GALAXY UGC 10445 <i>J. L. Hinz, K. Misselt, M. J. Rieke, G. H. Rieke, P. S. Smith, M. Blaylock, & K. D. Gordon</i>	874
X-RAY EMISSION FROM PLANETARY NEBULAE. I. SPHERICALLY SYMMETRIC NUMERICAL SIMULATIONS <i>Matthias Stute & Raghvendra Sahai</i>	882
PLANETARY NEBULA ABUNDANCES AND MORPHOLOGY: PROBING THE CHEMICAL EVOLUTION OF THE MILKY WAY <i>Letizia Stanghellini, Martin Antonio Guerrero, Katia Cunha, Arturo Manchado, & Eva Villaver</i>	898
TEMPERATURE INVERSION ON THE SURFACE OF EXTERNALLY HEATED OPTICALLY THICK MULTIGRAIN DUST CLOUDS © <i>Dejan Vinković</i>	906
A MULTIWAVELENGTH STUDY OF YOUNG MASSIVE STAR-FORMING REGIONS. I. THE IONIZED GAS CONTENT <i>Guido Garay, Kate J. Brooks, Diego Mardones, & Ray P. Norris</i>	914
MILLIMETER- AND SUBMILLIMETER-WAVE OBSERVATIONS OF THE OMC-2/3 REGION. I. DISPERSING AND ROTATING CORE AROUND THE INTERMEDIATE-MASS PROTOSTAR MMS 7 <i>Satoko Takahashi, Masao Saito, Shigehisa Takakuwa, & Ryohei Kawabe</i>	933
THE SPITZER c2d SURVEY OF NEARBY DENSE CORES. I. FIRST DIRECT DETECTION OF THE EMBEDDED SOURCE IN IRAM 04191+1522 <i>Michael M. Dunham, Neal J. Evans II, Tyler L. Bourke, Cornelis P. Dullemond, Chadwick H. Young, Timothy Y. Brooke, Nicholas Chapman, Philip C. Myers, Alicia Porras, William Spiesman, Peter J. Teuben, & Zahed Wahhaj</i>	945
COLLIMATED JET OR EXPANDING OUTFLOW: POSSIBLE ORIGINS OF GAMMA-RAY BURSTS AND X-RAY FLASHES <i>Akira Mizuta, Tatsuya Yamasaki, Shigehiro Nagataki, & Shin Mineshige</i>	960

CONTENTS

vii

	Page
THE COSMIC-RAY PRECURSOR OF RELATIVISTIC COLLISIONLESS SHOCKS: A MISSING LINK IN GAMMA-RAY BURST AFTERGLOWS <i>Milo Milosavljević & Ehud Nakar</i>	979
GRB 060313: A NEW PARADIGM FOR SHORT-HARD BURSTS? © <i>Peter W. A. Roming, Daniel Vanden Berk, Valentin Pal'shin, Claudio Pagani, Jay Norris, Pawan Kumar, Hans Krimm, Stephen T. Holland, Caryl Gronwall, Alex J. Blustin, Bing Zhang, Patricia Schady, Takanori Sakamoto, Julian P. Osborne, John A. Nousek, Frank E. Marshall, Peter Mészáros, Sergey V. Golenetskii, Neil Gehrels, Dmitry D. Frederiks, Sergio Campana, David N. Burrows, Patricia T. Boyd, Scott Barthelmy, & R. L. Apter</i>	985
EARLY TIME CHROMATIC VARIATIONS IN THE WIND-SWEPT MEDIUM OF GRB 021211 AND THE FAINTNESS OF ITS AFTERGLOW <i>M. C. Nysewer, D. E. Reichart, H.-S. Park, G. G. Williams, K. Kinugasa, D. Q. Lamb, A. A. Henden, S. Klose, T. Kato, A. Harper, H. Yamaoka, C. Laws, K. Torii, D. G. York, J. C. Barentine, J. Dembicky, R. J. McMillan, J. A. Moran, D. H. Hartmann, B. Ketzback, M. B. Bayliss, J. W. Bartelme, J. A. Crain, A. C. Foster, M. Schwartz, P. Holvorcem, P. A. Price, R. Canierna, G. B. Crew, G. R. Ricker, & S. D. Barthelmy</i>	994
THE RADIO AND X-RAY LUMINOUS SN 2003bg AND THE CIRCUMSTELLAR DENSITY VARIATIONS AROUND RADIO SUPERNOVAE <i>A. M. Soderberg, R. A. Chevalier, S. R. Kulkarni, & D. A. Frail</i>	1005
⁵⁵ Fe IN SUPERNOVA 1987A <i>M. D. Leising</i>	1019
TRAPPING OF MAGNETIC FLUX BY THE PLUNGE REGION OF A BLACK HOLE ACCRETION DISK © <i>Christopher S. Reynolds, David Garofalo, & Mitchell C. Begelman</i>	1023
LIGHT CURVES FROM AN MHD SIMULATION OF A BLACK HOLE ACCRETION DISK © <i>Jeremy D. Schnittman, Julian H. Krolik, & John F. Hawley</i>	1031
ULTRALUMINOUS X-RAY SOURCES POWERED BY RADIATIVELY EFFICIENT TWO-PHASE SUPER-EDDINGTON ACCRETION ONTO STELLAR-MASS BLACK HOLES <i>Aristotle Socrates & Shane W. Davis</i>	1049
EVOLUTION OF MASSIVE BLACK HOLE TRIPLES. I. EQUAL-MASS BINARY-SINGLE SYSTEMS <i>Masaki Iwasawa, Yoko Funato, & Junichiro Makino</i>	1059
UNEXPECTED DYNAMICAL INSTABILITIES IN DIFFERENTIALLY ROTATING NEUTRON STARS <i>Shangli Ou & Joel E. Tohline</i>	1068
TRANSITIONS BETWEEN TURBULENT AND LAMINAR SUPERFLUID VORTICITY STATES IN THE OUTER CORE OF A NEUTRON STAR © <i>C. Peralta, A. Melatos, M. Giacobello, & A. Ooi</i>	1079
AN XMM-NEWTON SEARCH FOR X-RAY EMISSION FROM THE MICROLENSING EVENT MACHO-96-BLG-5 <i>A. A. Nucita, F. De Paolis, G. Ingrassio, D. Elia, J. de Plaa, & J. S. Kaastra</i>	1092
FAINT X-RAY SOURCES IN THE GLOBULAR CLUSTER TERZAN 5 © <i>C. O. Heinke, R. Wijns, H. N. Cohn, P. M. Lugger, J. E. Grindlay, D. Pooley, & W. H. G. Lewin</i>	1098
MODEL ATMOSPHERE ANALYSIS OF THE WEAKLY MAGNETIC DZ WHITE DWARF G165-7 <i>P. Dufour, P. Bergeron, G. D. Schmidt, James Liebert, H. C. Harris, G. R. Knapp, S. F. Anderson, & D. P. Schneider</i>	1112
THE PSEUDOCONTINUUM BOUND-FREE OPACITY OF HYDROGEN AND ITS IMPORTANCE IN COOL WHITE DWARF ATMOSPHERES <i>Piotr M. Kowalski</i>	1120
THE CORONAE OF γ DRACONIS © <i>Thomas R. Ayres, Alexer Brown, & Graham M. Harper</i>	1126
ON THE CO NEAR-INFRARED BAND AND THE LINE-SPLITTING PHENOMENON IN THE YELLOW HYPERGIANT ρ CASSIOPEIAE © <i>Nadya Gorlova, Alex Lobel, Adam J. Burgasser, George H. Rieke, Ilya Ilyin, & John R. Stauffer</i>	1130
OBSERVED ORBITAL ECCENTRICITIES. II. LATE-TYPE STARS <i>Helmut A. Abt</i>	1151
2MASS J05162881+2607387: A NEW LOW-MASS DOUBLE-LINED ECLIPSING BINARY <i>Amanda J. Bayless & Jerome A. Orosz</i>	1155
HD 203030B: AN UNUSUALLY COOL YOUNG SUBSTELLAR COMPANION NEAR THE L/T TRANSITION © <i>Stanimir A. Metchev & Lynne A. Hillenbrand</i>	1166
FORMATION AND EVOLUTION OF PLANETARY SYSTEMS: UPPER LIMITS TO THE GAS MASS IN DISKS AROUND SUN-LIKE STARS © <i>I. Pascucci, U. Gorti, D. Hollenbach, J. Najita, M. R. Meyer, J. M. Carpenter, L. A. Hillenbrand, G. J. Herczeg, D. L. Padgett, E. E. Mamajek, M. D. Silverstone, W. M. Schlingman, J. S. Kim, E. B. Stobie, J. Bouwman, S. Wolf, J. Rodmann, D. C. Hines, J. Lunine, & R. Malhotra</i>	1177
BROWNIAN MOTION IN PLANETARY MIGRATION <i>Ruth A. Murray-Clay & Eugene I. Chiang</i>	1194

	<i>Page</i>
DISTRIBUTIONS OF MAGNETIC FIELD ORIENTATIONS IN THE TURBULENT SOLAR WIND Ⓢ	1209
<i>B. R. Ratot</i>	
MODELING THE RADIATIVE SIGNATURES OF TURBULENT HEATING IN CORONAL LOOPS	1219
<i>S. Parenti, E. Buchlin, P. J. Cargill, S. Galtier, & J.-C. Vial</i>	
SPECTRAL LINES FOR POLARIZATION MEASUREMENTS OF THE CORONAL MAGNETIC FIELD. IV. STOKES SIGNALS IN CURRENT-CARRYING FIELDS Ⓢ	1229
<i>P. G. Judge, B. C. Low, & R. Casini</i>	
TWO SUCCESSIVE CORONAL MASS EJECTIONS DRIVEN BY THE KINK AND DRAINAGE INSTABILITIES OF AN ERUPTIVE PROMINENCE Ⓢ	1238
<i>G. P. Zhou, J. X. Wang, J. Zhang, P. F. Chen, H. S. Ji, & K. Dere</i>	
A STUDY OF THE ORIENTATION OF INTERPLANETARY MAGNETIC CLOUDS AND SOLAR FILAMENTS	1245
<i>Yuming Wang, Guiping Zhou, Pinzhong Ye, S. Wang, & Jingxiu Wang</i>	
A SPITZER STUDY OF COMETS 2P/ENCKE, 67P/CHURYUMOV-GERASIMENKO, AND C/2001 HT50 (LINEAR-NEAT)	1256
<i>Michael S. Kelley, Charles E. Woodward, David E. Harker, Diane H. Wooden, Robert D. Gehrz, Humberto Campins, Martha S. Hanner, Susan M. Lederer, David J. Osip, Jana Pittichová, & Elisha Polomski</i>	
SHOCK-WAVE HEATING MODEL FOR CHONDRULE FORMATION: PREVENTION OF ISOTOPIC FRACTIONATION	1272
<i>Hitoshi Miura & Taishi Nakamoto</i>	

THE ASTROPHYSICAL JOURNAL LETTERS

CONTENTS OF VOLUME 651, PART 2

2006 NOVEMBER 1, NUMBER 1

	<i>Page</i>
MECHANICAL MODEL FOR RELATIVISTIC BLAST WAVES <i>Andrei M. Beloborodov and Zuhngwhi Lucas Uhm</i>	L1
HIGH-ENERGY NEUTRINOS AND COSMIC RAYS FROM LOW-LUMINOSITY GAMMA-RAY BURSTS? <i>Kohta Murase, Kunihito Ioka, Shigehiro Nagataki, and Takashi Nakamura</i>	L5
ELECTRON ACCELERATION IN RELATIVISTIC GAMMA-RAY BURST SHOCKS E <i>Mikhail V. Medvedev</i>	L9
DISCOVERY OF HARD X-RAY DELAYS IN THE X-RAY EMISSION OF THE SEYFERT 1 GALAXY MARKARIAN 110: POSSIBLE EVIDENCE OF COMPTONIZATION <i>Surajit Dasgupta and A. R. Rao</i>	L13
3C 216: A POWERFUL FR II SEYFERT 1 GALAXY <i>Brian Punsly</i>	L17
THE LACK OF HALO ULTRALUMINOUS X-RAY SOURCES <i>Douglas A. Swartz</i>	L21
TRENDS IN THE GLOBULAR CLUSTER LUMINOSITY FUNCTION OF EARLY-TYPE GALAXIES <i>Andrés Jordán, Dean E. McLaughlin, Patrick Côté, Laura Ferrarese, Eric W. Peng, John P. Blakeslee, Simona Mei, Daniela Villegas, David Merritt, John L. Tonry, and Michael J. West</i>	L25
SUBSTRUCTURE IN TIDAL STREAMS: TRIBUTARIES IN THE ANTICENTER STREAM <i>C. J. Grillmair</i>	L29
DISCOVERY OF A TIDAL STREAM EXTENDING FROM NGC 5053 <i>Adam Lauchner, W. Lee Powell, Jr., and Ronald Wilhelm</i>	L33
EVIDENCE OF A HIGH CARBON ABUNDANCE IN THE LOCAL INTERSTELLAR CLOUD <i>Jonathan D. Slavin and Priscilla C. Frisch</i>	L37
METHANOL IN THE L1551 CIRCUMBINARY TORUS <i>Glenn J. White, C. W. M. Fridlund, P. Bergman, A. Beardsmore, René Liseau, M. Price, and R. R. Phillips</i>	L41
HIGH-ENERGY PARTICLES IN THE WIND NEBULA OF PULSAR B1509–58 AS SEEN BY INTEGRAL <i>M. Forot, W. Hermsen, M. Renaud, P. Laurent, I. Grenier, P. Goret, B. Khelifi, and L. Kuiper</i>	L45
EVIDENCE FOR MASS-DEPENDENT CIRCUMSTELLAR DISK EVOLUTION IN THE 5 Myr OLD UPPER SCORPIUS OB ASSOCIATION E <i>John M. Carpenter, Eric E. Mamajek, Lynne A. Hillenbrand, and Michael R. Meyer</i>	L49
ESTIMATING Be STAR DISK RADII USING H α EMISSION EQUIVALENT WIDTHS <i>Erika D. Grundstrom and Douglas R. Gies</i>	L53
DISCOVERY OF THE BRIGHTEST T DWARF IN THE NORTHERN HEMISPHERE <i>Étienne Artigau, René Doyon, David Lafrenière, Daniel Nadeau, Jasmin Robert, and Loïc Albert</i>	L57
TrES-2: THE FIRST TRANSITING PLANET IN THE KEPLER FIELD <i>Francis T. O'Donovan, David Charbonneau, Georgi Mandushev, Edward W. Dunham, David W. Latham, Guillermo Torres, Alessandro Sozzetti, Timothy M. Brown, John T. Trauger, Juan A. Belmonte, Markus Rabus, José M. Almenara, Roi Alonso, Hans J. Deeg, Gilbert A. Esquerdo, Emilio E. Falco, Lynne A. Hillenbrand, Anna Roussanova, Robert P. Stefanik, and Joshua N. Winn</i>	L61
UNRAVELLING TEMPORAL VARIABILITY IN SATURN'S SPIRAL DENSITY WAVES: RESULTS AND PREDICTIONS <i>Matthew S. Tiscareno, Philip D. Nicholson, Joseph A. Burns, Matthew M. Hedman, and Carolyn C. Porco</i>	L65
LONG-LIVED SOLAR NEUTRON EMISSION IN COMPARISON WITH ELECTRON-PRODUCED RADIATION IN THE 2005 SEPTEMBER 7 SOLAR FLARE <i>T. Sako, K. Watanabe, Y. Muraki, Y. Matsubara, H. Tsujihara, M. Yamashita, T. Sakai, S. Shibata, J. F. Valdés-Galicia, L. X. González, A. Hurtado, O. Musalem, P. Miranda, N. Martinic, R. Ticona, A. Velarde, F. Kakimoto, S. Ogio, Y. Tsunesada, H. Tokuno, Y. T. Tanaka, I. Yoshikawa, T. Terasawa, Y. Saito, T. Mukai, and M. Gros</i>	L69
DIELECTRONIC RECOMBINATION OF Fe 3p ⁶ IONS: A KEY INGREDIENT FOR DESCRIBING X-RAY ABSORPTION IN ACTIVE GALACTIC NUCLEI <i>N. R. Badnell</i>	L73
INSTRUCTIONS TO AUTHORS OF LETTERS, AND ADDITIONAL USEFUL INFORMATION	<i>Inside Back Cover</i>

2006 NOVEMBER 10, NUMBER 2

	Page
ANGULAR DIAMETER DISTANCE MEASUREMENT WITH GALAXY CLUSTERING IN THE MULTIPOLE SPACE <i>Asantha Cooray</i>	L77
POINT-SOURCE POWER IN 3 YEAR WILKINSON MICROWAVE ANISOTROPY PROBE DATA <i>K. M. Huffenberger, H. K. Eriksen, and F. K. Hansen</i>	L81
COULD GRB 060614 AND ITS PRESUMED HOST GALAXY BE A CHANCE SUPERPOSITION? <i>B. E. Cobb, C. D. Bailyn, P. G. van Dokkum, and P. Natarajan</i>	L85
ESCAPE OF IONIZING RADIATION FROM STAR-FORMING REGIONS IN YOUNG GALAXIES \textcircled{E} <i>Alexei O. Razoumov and Jesper Sommer-Larsen</i>	L89
THE DEEP2 GALAXY REDSHIFT SURVEY: MEAN AGES AND METALLICITIES OF RED FIELD GALAXIES AT $z \sim 0.9$ FROM STACKED KECK DEIMOS SPECTRA <i>Ricardo P. Schiavon, S. M. Faber, Nicholas Konidaris, Genevieve Graves, Christopher N. A. Willmer, Benjamin J. Weiner, Alison L. Coil, Michael C. Cooper, Marc Davis, Justin Harker, David C. Koo, Jeffrey A. Newman, and Renbin Yan</i>	L93
THE BINARY NUCLEUS IN VCC 128: A CANDIDATE SUPERMASSIVE BLACK HOLE IN A DWARF ELLIPTICAL GALAXY \textcircled{E} <i>Victor P. Debattista, Ignacio Ferreras, Anna Pasquali, Anil Seth, Sven De Rijcke, and Lorenzo Morelli</i>	L97
INFRARED DUST EMISSION IN THE OUTER DISK OF M51 <i>Michele D. Thornley, Jonathan Braine, and Erwan Gardan</i>	L101
ABUNDANT DUST FOUND IN INTERGALACTIC SPACE \textcircled{E} <i>E. Xilouris, P. Alton, J. Alikakos, K. Xilouris, P. Boumis, and C. Goudis</i>	L107
THE EFFECT OF STAR FORMATION ON THE FAR-INFRARED-RADIO CORRELATION WITHIN GALAXIES <i>E. J. Murphy, G. Helou, R. Braun, J. D. P. Kenney, L. Armus, D. Calzetti, B. T. Draine, R. C. Kennicutt, Jr., H. Roussel, F. Walter, G. J. Bendo, B. Buckalew, D. A. Dale, C. W. Engelbracht, J. D. T. Smith, and M. D. Thornley</i>	L111
SPITZER MEASUREMENTS OF ATOMIC AND MOLECULAR ABUNDANCES IN THE TYPE IIP SN 2005af \textcircled{E} <i>Rubina Kotak, Peter Meikle, Monica Pozzo, Schuyler D. van Dyk, Duncan Farrah, Robert Fesen, Alexei V. Filippenko, Ryan J. Foley, Claes Fransson, Christopher L. Gerardy, Peter A. Höflich, Peter Lundqvist, Seppo Mattila, Jesper Sollerman, and J. Craig Wheeler</i>	L117
A NEW VIEW OF THE DWARF SPHEROIDAL SATELLITES OF THE MILKY WAY FROM VLT FLAMES: WHERE ARE THE VERY METAL-POOR STARS? <i>Amina Helmi, M. J. Irwin, E. Tolstoy, G. Battaglia, V. Hill, P. Jablonka, K. Venn, M. Shetrone, B. Letarte, N. Arimoto, T. Abel, P. Francois, A. Kaufer, F. Primas, K. Sadakane, and T. Szeifert</i>	L121
WATER MASERS ASSOCIATED WITH INFRARED DARK CLOUD CORES \textcircled{E} <i>Yang Wang, Qizhou Zhang, Jill M. Rathborne, James Jackson, and Yuefang Wu</i>	L125
GAS-PHASE STUDY OF CORONENE CATION REACTIVITY OF INTERSTELLAR RELEVANCE <i>Nicholas B. Betts, Momir Stepanovic, Theodore P. Snow, and Veronica M. Bierbaum</i>	L129
DEEP HST PHOTOMETRY OF NGC 6388: AGE AND HORIZONTAL-BRANCH LUMINOSITY <i>M. Catelan, Peter B. Stetson, Barton J. Pritzl, Horace A. Smith, Karen Kinemuchi, Andrew C. Layden, Allen V. Sweigart, and R. M. Rich</i>	L133
FOUND: THE MISSING BLUE OPACITY IN ATMOSPHERE MODELS OF COOL HYDROGEN WHITE DWARFS \textcircled{E} <i>P. M. Kowalski and D. Saumon</i>	L137
THE HYDROGEN-BURNING TURNOFF OF RS OPHIUCHI (2006) \textcircled{E} <i>Izumi Hachisu, Mariko Kato, Seiichiro Kiyota, Katsuaki Kubotera, Hiroyuki Maehara, Kazuhiro Nakajima, Yuko Ishii, Mari Kamada, Satoru Mizoguchi, Shinji Nishiyama, Naoko Sumitomo, Ken'ichi Tanaka, Masayuki Yamanaka, and Kozo Sadakane</i>	L141
PROTO-BROWN DWARF DISKS AS PRODUCTS OF PROTOSTELLAR DISK ENCOUNTERS \textcircled{E} <i>Sijing Shen and James Wadsley</i>	L145
INSTRUCTIONS TO AUTHORS OF LETTERS, AND ADDITIONAL USEFUL INFORMATION	Inside Back Cover
INSTRUCTIONS FOR ELECTRONIC MANUSCRIPT SUBMISSION	Back Cover

